THE BUILDING GAZETTE

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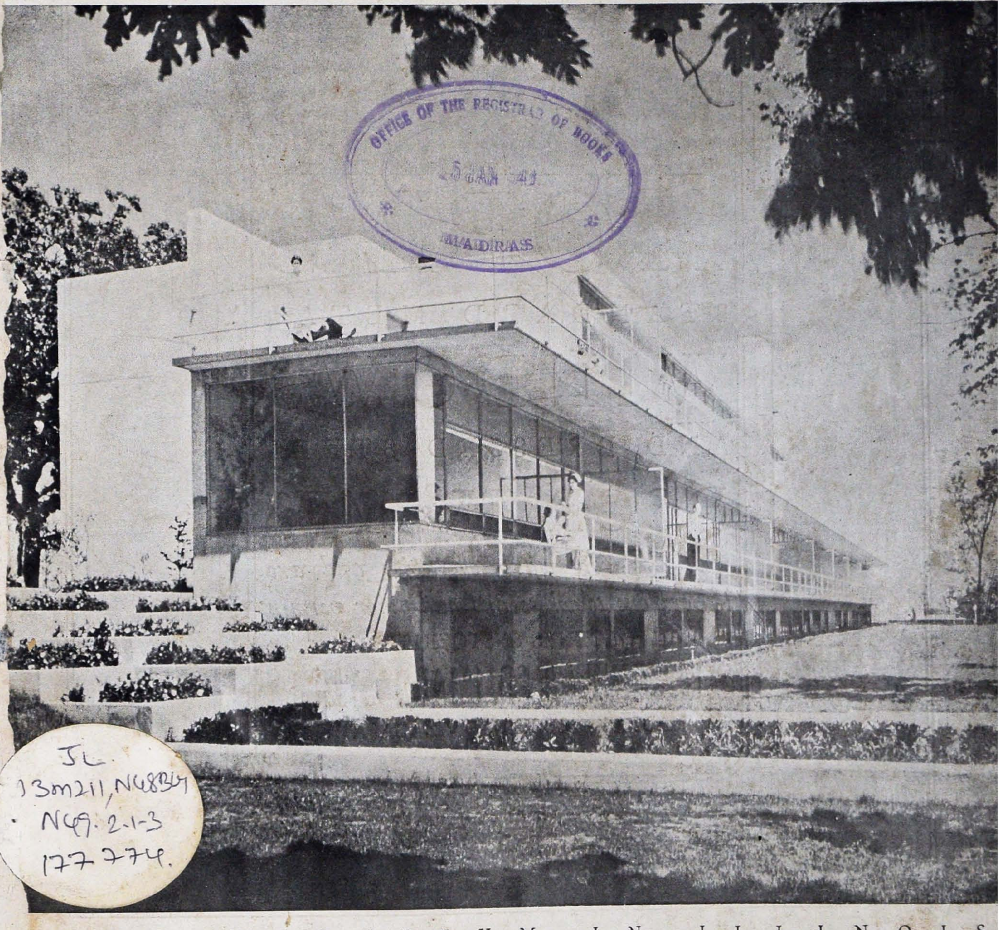

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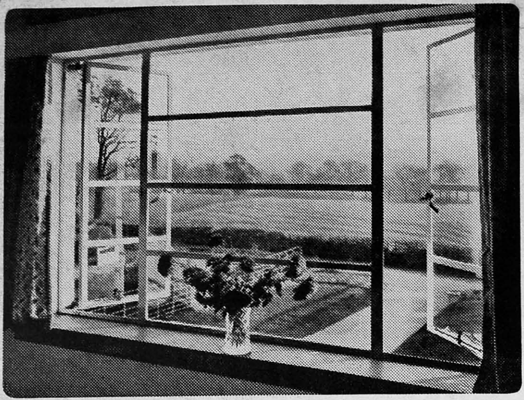

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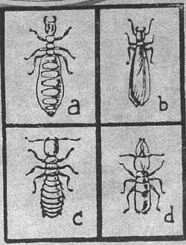

Left: The White Ant family of destroyers.
(a) Queen. *(b) Male.*
(c) Worker. *(d) Soldier.*

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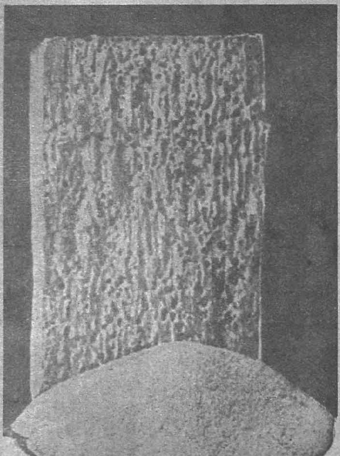

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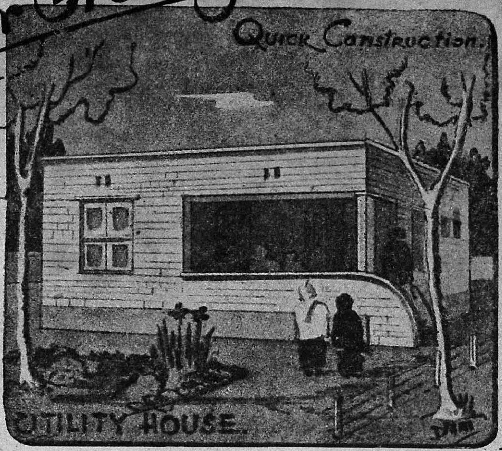
New Year Greetings



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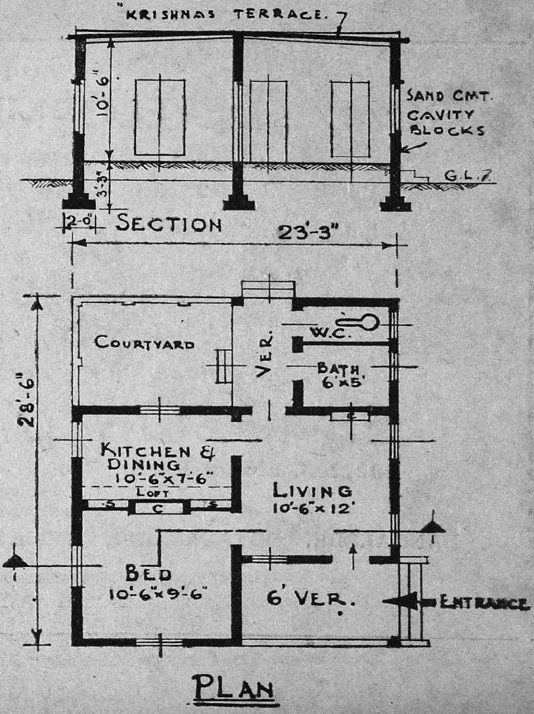

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THE BUILDING GAZETTE

AN INDEPENDENT MONTHLY JOURNAL DEVOTED TO THE INTERESTS OF BUILDING INDUSTRY

VOLUME 2 JANUARY 15, 1949 NUMBER 1

Articles, photographs, and drawings with a view to publication will be carefully considered. All such articles and illustration should bear the name and address of the sender, and postage should be sent to cover their return if desired in the event of non-acceptance. All communications on Editorial matters should be addressed to the Editor, and all those pertaining to Advertisements to the Manager, THE BUILDING GAZETTE, 1/11, Mukker Nallamuthu Street, G.T., Madras.

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THE BUILDING GAZETTE

1/11, MUKKER NALLAMUTHU STREET

G.T., MADRAS.

EDITED BY T. N. SUBRAMANIAM

Associate, Faculty of Surveyors of England

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BANKS AND BANKING

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THE TEE-SQUARE HOUR

Realism, sir, is what is needed now among engineers. Much more realism !

Advocate is paid Rs. 50 to scrutinize a lease. Engineers are not offered Rs. 15 for a 'master-plan.' This state of affairs is general and wide-spread.

Engineers in private practice, engineers in municipal service, and the assistants of both, appear to be conscious of it equally.

Its causes are of considerable complexity. In so far as they lie wholly within the profession, they appear to be chiefly two. Tendencies outside the profession are compelling changes within it, and its members in general, while doubtful of what changes to make, are aware of the insecurity and possible unsuitability of the present organization of engineering practice. And the younger members of the profession are finding themselves increasingly compelled to choose between very considerable financial insecurity and entering Government departments which, as at present organized, do not offer a reasonably attractive remuneration to energetic young men.

The young men who make up the mass of assistants are in an even more difficult position ; particularly when they have extraordinary initiative and energy which engineering particularly needs.

This Journal feels this state of professional uneasiness can surely be remedied if engineers at present in private practice and engineers in municipal service meet together and form an Institute of Municipal Engineers (not Associations) ; and if this body works with an ingredient of realism to increase the prestige and prosperity of the profession and take the initiative to render technical co-operation to local bodies we have no doubt the Municipalities in this country will adopt a uniform Building Code.

Members of such a specialised professional institution will be in a position to set up lucrative private practice in every municipal town and such of those who gain wide experience in civic planning could be drawn to fill up vacancies in the municipalities. Thus, not only the standard of practice is enhanced, but also a scale of charges may be introduced with profit.

NOTES AND TOPICS

Stop Exporting Students : Start Importing Teachers.

"The spread of industry is a question of knowledge and it appears to me that the steps you are taking to provide technical education, through your universities and technical colleges, are of primary importance. I would suggest that you should encourage Britishers to come out and instruct your nationals in technical processes in your industries," said Sir Percy Mills, Managing Director of Messrs. Avery Ltd. of England, and former War-time Controller-General of Machine Tools, and Head of the Production Division in the Ministry of Production, recently in Madras.

It is exactly in this way the Japanese educated their nationals and came to power in 50 years' time.

Substitute for Timber Flooring.

Working class flats under construction in London include a novel feature—a new type of flooring composition which the Ministry of Works has accepted as a suitable substitute for timber floors. The simplicity and speed of the processes involved have greatly impressed visitors who went to see the flooring laid and finished.

The composition, which includes liquid rubber, concrete, and grit, provides a covering which is not cold to walk on. In its finished state it looks like linoleum. Its cost is from Rs. 8-10-0 to Rs. 10-10-0 per square yard laid.

Housing in Madras.

The question of encouraging insurance companies to take up house-construction schemes in Madras City so as to relieve the present congestion is under the consideration of the Madras Government. The proposal of a leading insurance company of Bombay to invest Rs. 2 crores for building 2,000 houses within a short period, it is learnt, is being examined by the Government.

Engineering Association of India : Annual Session in Calcutta.

Minister for Industries, Dr. S. P. Mookerjee, inaugurated the annual session of the Engineering Association of India in Calcutta on December 15.

Mr. B. K. Rohatgi, who presided, said that the present depressed state of Indian industries was due to the "crisis of confidence" engendered by various factors including the "vacillating policy of the Central and Provincial Governments" and "contradictory statements and declarations of Ministers." He urged reorientation and restatement of the Government's industrial policy and said that nationalization was a useless cry. Their slogan should be "less Government in business and more business in Government."

Mr. A. K. Bhattacharya was elected President of the Association for the coming year.

Fillip to House Building.

Government of Madras have directed the Executive authorities of all municipalities and panchayats to consider the question of reservation of suitable areas for future co-operative housing societies where they draw up town planning schemes in the future. Reservation of land for this purpose could be made either by legislation or outright acquisition.

India Office in New York.

The new building acquired by the Government of India for housing the Indian Consul in U.S.A. is a six-storey, forty-room mansion in 64th Street, New York. It was built in 1902.

Rent and Valuation : A Sample Survey.

"The relation between the annual rent of premises and their annual valuation as made by the Corporation was the subject of a recent inquiry" according to a sample survey of Calcutta made by the West Bengal Government's Statistical Bureau.

According to the rules, the annual valuation should be 90% of the annual rental value, if the tenant pays the occupier's tax and 81% if the owner pays the tax.

Taking Calcutta as a whole the ratio of the rental to the assessed value is found to be 2·12, which shows that actual assessment is about half of what it should be on the basis of rent. In 10% of the cases there was over-valuation, in 15% correct valuation, and 75% under-valuation.

The report comments that "under-valuation is the rule and that the system of assessment now followed by the Calcutta Corporation needs thorough overhauling."

College News.

The Technical Education Advisory Board, Madras has accepted the recommendations of its Sub-Committee that the B.E. Degree course be reduced to 3 years and that a Technical Education Board be created with a Director in charge of the development of technical education in the province.

The Government of Madras have directed that the B.E. (Electrical) Degree of the Bombay University be recognised as an alternate quali-

fication for the B. E. (Electrical) Degree of the Madras University.

The Diploma of the Overseer Course awarded by the Indian Civil Engineering Institute, Sukkur, prior to August 15, 1947, has been ordered by the Madras Government to be recognised as equivalent to licentiate in Civil Engineering diploma of the College of Engineering Guindy.

Housing in Bombay.

The Bombay Government have a Scheme, it is learnt, for spending a sum of Rs. 2 crores for the next year in furtherance of their housing programme which will, hereafter, be taken up by the House Board to be formed shortly under the Bombay Housing Act which is awaiting the assent of the Governor-General.

The House Board the personal of which is almost ready, would take over the administration of housing from Government and see to the completion of the whole programme. Government expects to get further financial assistance a substantial sum-besides what they had already secured from the Central Government.

The Governments scheme is to construct at least 10,000 houses for refugees in the province, and therefore, necessary material and finance would be required.

Greater Dacca Plan.

The official plan for Greater Dacca by Mr. E. C. Hicks, Consulting Architect to the East Bengal Government is nearing completion.

The blue print for the provincial capital includes a 550-acre industrial area, as distinct from the commercial and business area, and a workers colony having all modern amenities.

The Commercial and business area will have a two-mile frontage of three storeyed buildings with shops on the ground floor, offices on the second floor and flats on the third floor.

The plan envisages a model residential area with 550 houses, intersected by well laid-out roads, playing fields, shopping centres, schools and other amenities.

Medal for Research.

The Executive Committee of the Central Board of Irrigation has decided to institute a Medal to be called the Central Board of Irrigation Medal which will be awarded every year to the author of the best published research or other original contribution to the development of the water resources of India.

Prime Minister Crowns Engineer.

"No country has greater potential water resources than India has in the Himalayas", said Pandit Jawaharlal Nehru, inaugurating the 19th annual meeting of the Central Board of Irrigation in New Delhi recently. "How are we to utilize it? Essentially this is a job for engineers. The profession and work of the engineer is of the highest importance."

Engineering Exhibition.

The fourth Engineering Exhibition was held recently under the auspices of the College of Engineering Guindy. It was declared open on the 31st December by the Governor of Madras. There were 16 sections in the Exhibition which was appreciated by the public more than the Khadi Exhibition.

Hydro-Electric Development in India.

An unwholesome feature of the sacrcity progress of Hydro electric development in India according to a bulletin issued by the Central Board of Irrigation is that most of the existing installations have been planned to satisfy the demands of urban areas. This is best illustrated by the fact that Calcutta and Bombay, with a total population of one per cent of the whole country between them consume 50% of the total electric energy produced in India.

The first hydro-electric plant installed in India was a small municipal town lighting plant at Darjeeling, in 1897-98. The first plant installed in the U. S. A., it is believed, was in 1882 and in Canada in 1900.

Canada, where the first hydro-electric installation was erected three years after the first plant went up in India, has today 7. 7 in Kilowatts of installed capacity or more than 15 times that of India. The total Capacity in the U. S. A. and Russia is 29 times and 45 times respectively of that in India. Even comparatively small countries like France, Switzerland, Norway, Sweden and Japan have each anything from 5 to 10 times the installed capacity in India. The per capita consumption of 1660 kilowatts-hours in the U. S, A., 1944 K. W. H. in Switzerland, 2100 K.W.H. in Sweden, 3090 K.W H. in Norway and 4000 K.W.H. in Canada compared with a paltry 9.2 K.W.H. in India.

Some idea of India's potential of hydro-electric power can be had when it is stated that the entire power now utilized on the railways in India can be generated from a single project like the Kosi. The railway, consume about 7 m. tons of coal, annually, or just one-third of the Country's total consumption.

When the hydro-electric projects now under construction or awaiting construction are completed, India's resources of developed water-power will probably rank as the third largest in the world, next only to those of the U. S. A. and Russia. What revolution this will bring about in the life of the average person in India can best be imagined.

Forthcoming Activities: Timber Conference in India.

The next session of the Timber and Forest Utilization Conference for Asia and the Pacific, it is learnt, is likely to be held in Mysore City next summer.

One of the main objects of the conference will be to discover means of bridging the wide gap between the supply and demand of timber by better methods of timber utilization.

BULK CEMENT CONVEYING

Major J. SIM, A.I.MECH.E., M.M.G.I.

Dam Building in India is going to become a major industry as the Government's Plans for Irrigation and Hydro-Electric Schemes unfold.

In the main, preliminary reports on the schemes have been completed by Consulting Engineers; specifications and designs are finished and soon contracts will be placed and construction will begin.

These projects together with India's vast road building programmes are going to require a great deal of cement. The Central Government has planned a considerable expansion programme and new Cement Plants are being built all over the country; those in the United Provinces and Orissa being as near the Dam sites as possible.

One of the first major problems that will loom in front of the builders will be the handling of cement, which will have to be done in bulk. At the moment nearly all Indian cement is moved in jute or paper sacks. These sacks cost about Rs. 65 a 100 so that sacked cement cost Rs. 13 a ton more than bulk cement.

Bulk Cement Handling has been developed a great deal in the United States of America, and cement is now shipped mainly in bulk in hopper bottomed cars, tipping trucks, barges, and even ocean-going vessels. A typical set-up for a road-side Bulk Cement Station is illustrated in Figure 1. The hopper-bottomed truck discharges its cement into a Fuller Pump situated underneath the Railway track. This pump pumps the cement into silos situated over the road and motor trucks can drive underneath the silos where the cement is fed directly into them by gravity.

At the moment, so far as the writer is aware, there are no hopper-bottomed trucks available in India and there are none on order by the Railway Board.

It would appear, therefore, that as hopper-bottomed cars will not be available, the only alternative in India will be to use a cement unloader pump, to pump cement from Indian Standard Covered Wagons direct to the temporary silos which will presumably be erected near the dam sites. The Indian Standard Wagon has a minimum door opening 4' wide and a special Fuller Unloading Pump has recently been designed so that it can be wheeled into the wagons and the cement can then be pumped direct into silos or into warehouses. This pump is illustrated in Figures 2 and 3.

If you will observe the illustration you will see that the pump is self-propelled and is completely mobile. The smallest unit can pump 25 tons of bulk cement per hour and if necessary after it has pumped bulk cement from the Railway wagons into the ware-

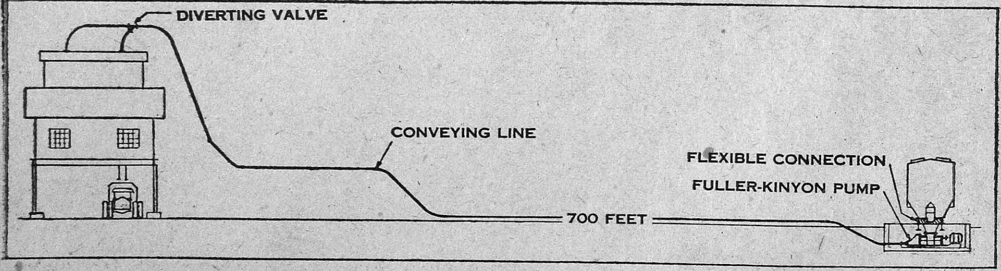


Fig. 1. Bulk Cement Road side Handling Station using Fuller Pumps.

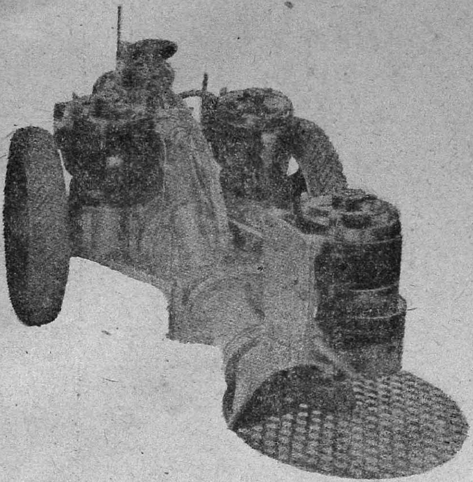
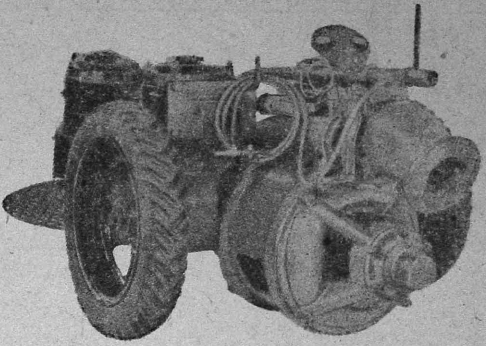


Fig. 2.
Front view of Fuller-Kinyon Remote-Control Unloader, showing relation of feeder disc to pump screw.



Rear view of Fuller-Kinyon Remote-Control Unloader. The flexible hose is connected to the flange of the non-return valve.

house can also be used for pumping bulk cement out of the warehouse into road vehicles. The unit is controlled by a Remote Control very simple to operate which can be seen in figure 4.

These remote-control unloaders have been used on almost every major dam project in the world.

It has often been found in Dam Construction that the cement has not only to be unloaded, conveyed and stored, but also requires blending. In this connection the Fuller Unloaders have played a large part on many dams constructed all over the world. For instance, at one large American Dam where a record pour of 21,000 yards of concrete was made in 24 hours, Fuller Unloaders handled all the cement, conveying from Railway wagons to storage tanks without delays or demurrage charges, an important point in construction costs.

Cement blending can be carried out automatically by Fuller Unloader Pumps pumping through a system of valves into a series of

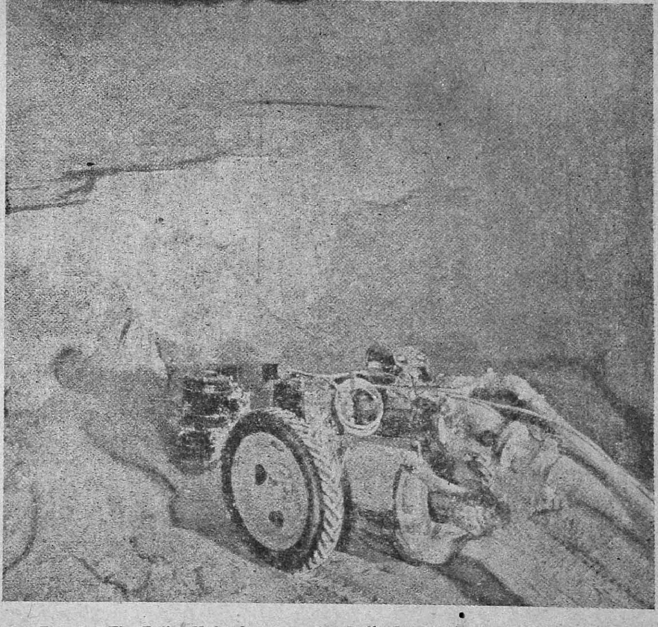


Fig. 3. The Fuller Unloader Removing Bulk Cement from a Godown.

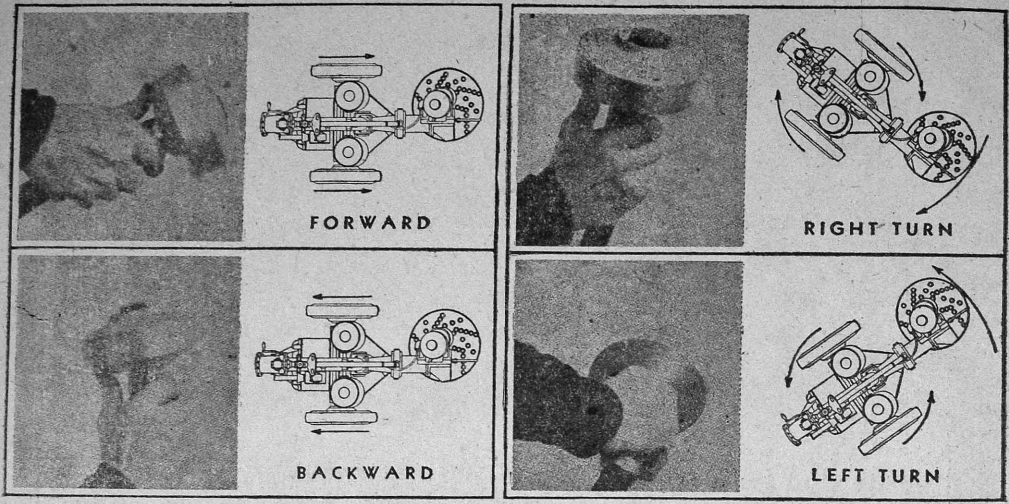


Fig. 4. The Fuller Unloader Remote Control.

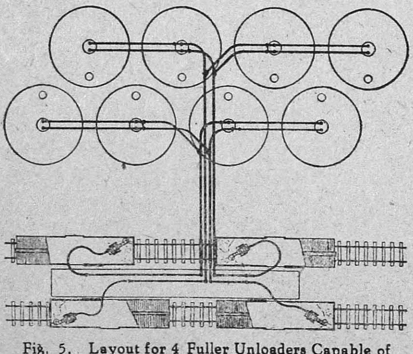


Fig. 5. Layout for 4 Fuller Unloaders Capable of Bending Bulk Cement in 8 Silos.

silos, and a typical lay-out is shown in Figure 5. The cement can be pumped from any of the four wagons into any of the eight silos. For instance, cement from one wagon can be pumped for, say, two minutes into each of the eight silos. By this method you will get a whole series of layers of cement lying horizontally in the silo. When the cement is then extracted from the bottom of the silo it will be appreciated that vortical action takes place and the cement coming out of the silo is completely blended.

It is interesting to note that a British Company in Bombay has a technical staff available for producing complete lay-outs of bulk handling cement or any similar material and the whole of the equipment can be obtained from the sterling area.

EVOLUTION OF THE BRITISH BUILDING SOCIETY

ANDREW STEWART, C.A., F.C.I.S.

Chairman of the Building Societies Association of England

The Congress in which we are taking part is important from many points of view, not the least of which is that it affords the first opportunity which we have had since the memorable Zurich Congress of 1938 of meeting our friends and colleagues who serve building societies in other countries. While, therefore, any gathering such as this is a source of pleasure and enjoyment to me, I am particularly glad to be able to attend this Brussels Congress as being the first post-war international building society meeting and to bring to you as Chairman of the Building Societies Association of Great Britain and Northern Ireland the warmest greetings and good wishes of all the members of that body. I hope that this Congress will prove of value and interest to all taking part in it and that the opportunity of meeting and discussing our various problems together will assist us all in the solution of them.

I have been asked to address the Congress on the development of the building society movement in the United Kingdom and in particular to explain the changes in structure and method which have taken place during the passage of years and have led to the firm establishment of the system which operates today. To do this it is necessary to outline the history of building societies and to show how they have adapted themselves to the changing needs of the times.

Having described the establishment of the first building societies, Mr. Stewart proceeded:—

The building society at this early stage of its development consisted of a relatively small number of members, each of whom made a fixed periodical contribution to the society's funds and to each of whom would be allotted a house. The contributions were generally calculated to yield sufficient monies to pay for all the houses by the time the last member's turn to receive a house came round, and on the attainment of this object the society came to an end.

This stage of development did not, however, last very long because, as you will appreciate, it was convenient only in cases where all the members wanted to buy a house of a certain type and where several such houses could be built on adjoining plots of land. There were, however, many who wished to buy a house not so situated or to build one to their own design, and very soon building societies ceased to undertake the actual building of houses and confined themselves to their present function of providing the necessary funds for the purchase of a house. However, by the time this stage arrived the name "building society" was widely known and well understood and for this reason it has persisted.

Early Legislation.

By 1836, building societies had become sufficiently numerous and important to claim Parliamentary notice and an Act was passed in that year which gave them Parliamentary recognition and accorded them certain privileges and exemptions which had seven years earlier been granted to friendly societies.

Since 1836 the building society has remained primarily an institution for assisting the purchase of houses. As time went on, however, the number and the activities of the societies grew and the next new departure we must note is the practice of borrowing money from persons who were not members of the society and did not desire an advance. They regarded the building society as a convenient institution which would accept money for investment at a satisfactory rate of interest and one which offered a reasonable degree of security for their capital.

The societies, however, adhered to the mutual principle, i.e., that every member was a borrower and that when every member had received his advance the society came to an end. This system had many complications and many drawbacks, and there were wide variations in the practice of different societies. Some, for example, held ballots to decide who should receive the next advance, others put up the advance to auction and sold it to the highest bidder. Another complication was that the advance was sometimes made free of interest and there were innumerable difficulties in attempting to maintain the solvency of the society.

Notwithstanding these complications, building societies continued to flourish and before one society came to an end those in charge of it would organise another society and so on. It was indeed probably in this way that the greatest change in building society practice in Great Britain came about, and this dates from just over 100 years ago.

Up till then all societies were of the type I have endeavoured to describe, viz., terminating societies as we call them, but about 1845 there was established the first society on a permanent basis, i.e., a

society which would continue to function indefinitely, unless its members should at any time decide to bring its existence to an end. There are today in Great Britain two permanent societies which were established in 1845, five which date from 1846 and ten from 1847, while there are quite a number who hope to celebrate their centenary during the next few years.

Emergence of Permanent Societies.

This gradual replacement of the terminating by the permanent society has, in my view, been the largest single factor contributing to the development of the building society movement, and you may judge the extent of the transformation from the fact that of the 874 existing building societies in Great Britain only 78 are terminating societies, and their total assets amount to only one seven-hundredth part of the whole.

This fundamental change involved the complete abandonment of the so-called "mutual principle," for the principle on which a permanent society operates is that two different kinds of people make use of a building society, viz., those who, on the one hand, wish for a convenient and safe repository for their savings and those who, on the other hand, wish to borrow money for the purpose of buying a house. The members of a permanent society are therefore divided into two classes, viz., investors and borrowers, but all are members and are equally bound by the society's rules.

The investing members may be subdivided again into two classes according to whether they hold fully-paid or subscription shares. A fully-paid shareholder can invest any round sum which he likes at any time (except when the society has, in order to avoid the accumulation of unnecessarily large funds, to impose a restriction on the amount of investments it will accept). The subscribing shareholder, on the other hand, undertakes to subscribe a fixed sum regularly every month for a fixed period of years, at the end of which he becomes the owner of a fully-paid share. The subscribing shareholder is, of course, the lineal descendant of the member of the original form of building society, and many societies still attach great importance to this class of membership which clearly does so much to encourage the habit of regular saving. Nevertheless, it must be stated that at the present time the amount of capital provided by subscribing shareholders forms a relatively small proportion of the total funds.

Borrowing Members.

The other class of member is, of course, the borrower. He need not previously have been an investor in the society, and British building societies fortunately now know nothing of "waiting periods." A person unknown to a building society may apply for an advance, and if the house is considered satisfactory security and the case possesses no complications, he may hope to receive his advance and to complete his purchase in not more than a month.

I have said that the members of building societies consist of two separate classes but that does not, of course, mean that the classes do not intermingle. On the contrary, many borrowers have previously been for some years investors, saving up their money towards the provision of that proportion of the purchase price which they must find in cash (from 10 to 25 per cent, according to the security offered), borrowing the balance from the building society. Indeed, many members of building societies begin as investors, subsequently become borrowers, and later on resume the role of investors once more.

There is a third class of person connected with a building society to whom brief reference must now be made. He is not a member of the society but a person who lends money to it as an ordinary business transaction and is a loan-holder or depositor. He has special protection, as by law a society may not accept more from depositors or loan-holders than is represented by two-thirds of the amounts owing on mortgages and if the society is wound up he is recognised as a creditor equally with other creditors and is entitled to be paid in full before the shareholders receive any payment. For this reason the rate of interest offered to depositors is always appreciably less than the rate offered to shareholders.

Simple Organisation.

The picture that I have attempted to draw will, I am sure, strike you as a very simple one, but this is indeed the truth, for a permanent building society is a very simple organisation. "From this point of view it may be contrasted with a terminating society which, as it developed in my country, took on so many different forms and so many varying complications that its true financial position could be appreciated only by an actuary, and indeed, when its affairs were investigated by one skilled in actuarial science, it was not infrequently found to be in an unsound financial position.

If I were asked to emphasise the main advantages of our present system I think I should sum them up as being stability, simplicity and flexibility. The first of these is, of course, fundamental, but I can think of few sounder institutions, than a well-administered building society. Good management is, of course, essential in any field of business and it is in the highest degree important that a building society should be well served by its directors, its manager, its surveyors and its solicitors. Here, perhaps, I might mention that the law under which building societies operate provides for an intimate supervision of the administration of societies by the Chief Registrar of Friendly Societies who, through the Treasury, is responsible to Parliament. The law authorises the Chief Registrar to call for the accounts of societies to be returned to him in standard form showing the most intimate detail of the transactions in each department of the society's

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SCIENTIFIC PRE-EMINENCE OF NATIONS

A COMPARISON

"I know most of this Nobel Prize winners in the field of physics and I do not remember any one of them who seem to me to have been as active and productive after the receipt of the Nobel Prize as Sir C. V. Raman." —*Prof. R. A. Millikan.*

The scientific potential of a nation today constitutes together with territorial extent, demographic and industrial strength, one of the chief elements of its political power. Just as industrial superiority can, up to a certain point, compensate for man-power shortage, so a scientific supremacy can within certain limits make good an inferior potential either industrial or human. It is therefore of interest to see how pre-eminence in Physics and Chemistry (the two sciences which form the basis of both military and industrial power) is distributed. A rough indication may be found by a comparative study of the lists of the Nobel prize-winners. The vigorous impartiality of the Swedish Academy of Science gives these awards great weight.

Grouping together the prize-winners by nationalities, we obtain the following results :—

	No. of Prize-winners	Population
Germans	30	70 millions
British	19	46.2 ,,
French	13	92.4 ,,
Americans	10	150.6 ,,
Dutch	6	8.9 ,,
Swedish	6	6.5 ,,
Austrians	3	6.7 ,,
Swiss	3	4.2 ,,
Italians	2	48.5 ,,
Hungarians	1	9.1 ,,
Finns	1	3.8 ,,
Danes	1	3.9 ,,
INDIANS	1	337 ,,

Sir C. V. Raman

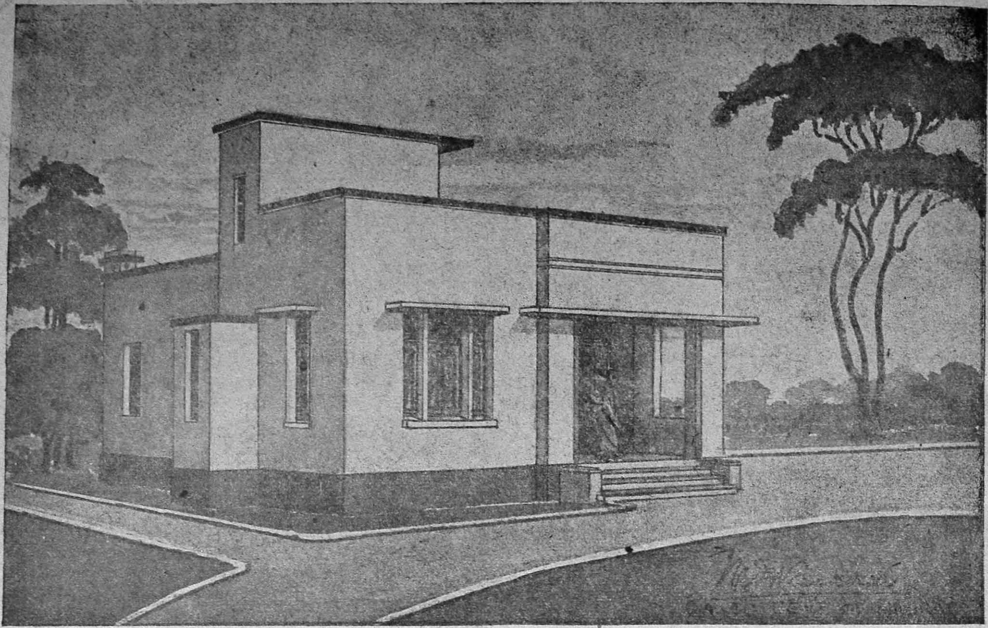
The only Nobel Laureate in India

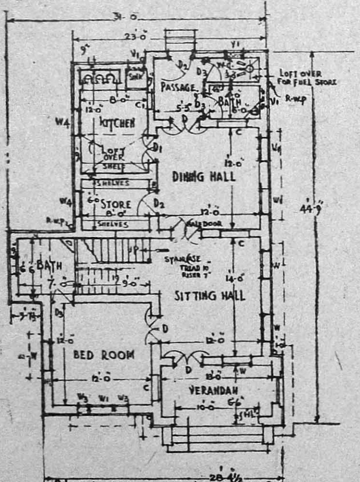
Germany was thus far and away ahead especially in Chemistry, where her proportion amounts to 40 per cent of the total. The relatively modest place of the United States becomes much less so if we note that of the ten prizes gained by the Americans six have been awarded since 1932—a significant indication of the rapid rise of American science in recent years.

Another striking fact is the complete absence of Russia. Since the disappearance of Mendeleyev, Russia has not produced a single physicist or chemist of the calibre of an Einstein, a Rutherford or a Broglie. To be noted, too, is the high proportion achieved by the small nations—Holland, Switzerland, Sweden—which, relatively to their populations, can each claim more Nobel prizes than any other nation.

The differences are doubtless explained by historic and social causes. German industry, in marked contrast to British and French, was created by savants and technicians, and displayed from the start the liveliest interest in science. The Kaiser Wilhelm Institutes for pure and applied research were a model of liaison between science and industry. The modern scientific press was born in Germany. Germany had an advantage of more than two generations over France and England but lost much of this advantage with the coming of Nazism, which was not only the negation of scientific principle, but forced into exile hundreds of scientists like Einstein and Haber. The contribution of these exiles to their countries of adoption, especially Great Britain and the United States, measures the extent of Germany's loss.

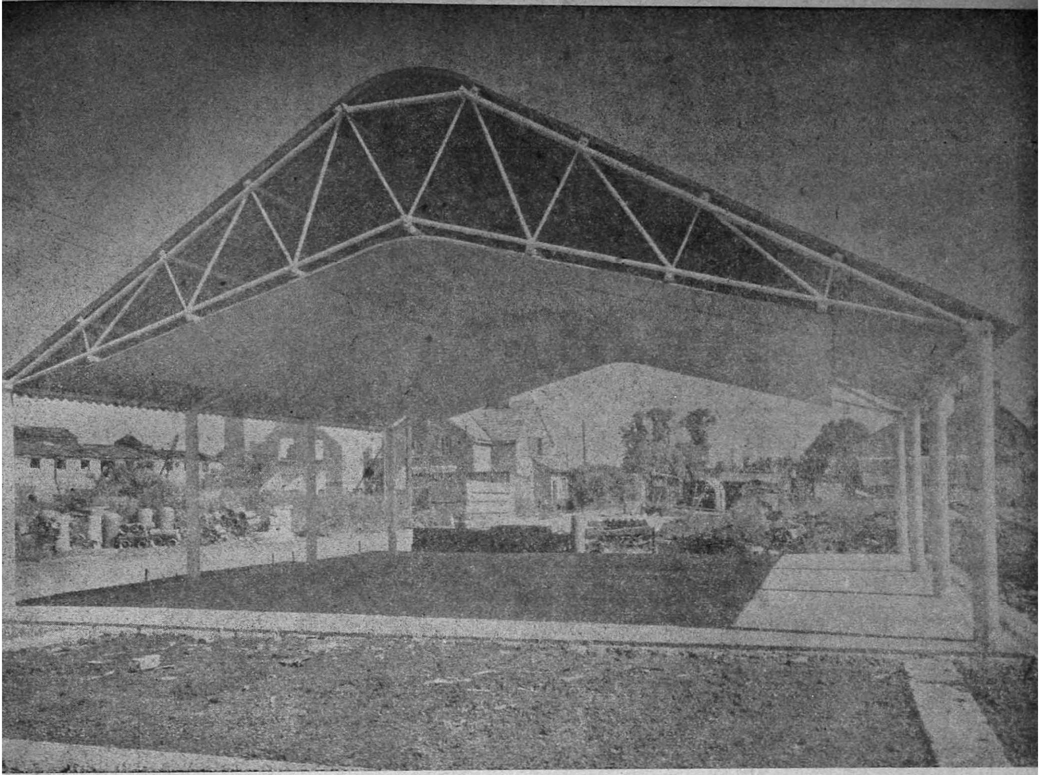
—*The World Review.*





PLAN·OF·GROUND·FLOOR·

Typical of the Middle Class House designed by N. Jambulinga Nayakar, F.R.S.E., A.I.A.A., for the Co-operative Housing Society, Madras.



NEW LIGHT-WEIGHT ROOFING UNITS

To meet a demand expressed by leading engineers engaged in Tropical development, a new light-weight, easily transportable and easily erected roofing unit has been designed and produced by some of the firms which were associated in the United Kingdom with the very successful Arcon temporary pre-fabricated house.

It was stated by these engineers that while reasonably satisfactory walling and flooring materials were often available, roofs always presented difficulties. The new roof is intended to overcome them.

The roof, known as the Arcon tropical roof, is highly resistant to atmospheric corrosion and is designed neither to harbour insects nor be attacked by them. It consists of tubular steel columns set in concrete foundations, supporting welded tubular steel roof trusses covered above and below by corrugated cement sheeting. This basic structure gives a space of 30 feet wide and of any desired length in multiples of the 10-ft. bay unit—covered at a minimum height of 7' 6".

The constructional units are easily transportable and can be handled without mechanical aid. A 30 ft. by 30 ft. 3-bay structure,

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business. Shareholders are entitled to see these accounts and they are also available for inspection by the general public.

Easily understood.

I attach importance to its simplicity because a building society has a very wide appeal to the public and its organisation should be so simple that it can easily be understood by those who wish either to invest in it or to borrow from it. The movement could never, in my opinion, have made the headway which it has if the average man had not felt that not only were building societies sound and useful but that they were institutions in whose affairs he could take an interest.

The advantage of flexibility appears most when seen in comparison with the rigid form of the terminating society. The permanent society can adapt itself to the needs of the times and regulate its flow of investment monies and advances according to demand while, by the holding of considerable cash and investments, it has always a cushion to withstand the shocks of sudden financial movements.

All these three factors have, I think, had their share in contributing to the great growth of the building society movement, not only in Great Britain but also in the Dominions and in the United States of America where there are flourishing organisations working on similar lines.

Post-War Service.

It is well known that in the 20 years between the two wars the building societies in Great Britain lent £1,500 millions in the cause of home ownership and incidentally increased their total assets by ten times—from £70 millions to £700 millions. Since the end of the recent war it has not been possible for them to assist so fully as they could have wished in the solution of the housing problem, owing to the Government's decision that four houses out of every five must be built by local authorities to let and, more recently, by the decision that for the present no house may be built for sale except with the permission of a Regional Officer of the Ministry of Health. Nevertheless, building societies have been active in providing money for the purchase of houses built before the war, particularly by tenants buying from their landlord the house in which they are living. The total amount advanced during 1946 was £187 millions—a not inconsiderable sum even when allowance is made for the increase in prices which has taken place.

Great Influence for Peace.

May I, in conclusion, return to the theme with which I opened and reiterate the good wishes of the building societies in Great Britain for the success of this Congress. We have for many years taken a very real interest in the development of building societies in other countries and we are only too ready to assist our colleagues in any way and to any extent that they may desire. We in Great Britain believe profoundly in the social value of the building society movement and you may, therefore, regard the members of the Building Societies Association as always ready to assist in any way they can the development of kindred movements overseas.

I fully appreciate the tremendous set-backs to the building society movement in Europe due to the war, and my fullest sympathy goes out to all who have had to watch with bitterness and sorrow the disruption of their many years of endeavour. The future, however, holds great potentialities and opportunities, although for some of you they may come less quickly than for others. In every country, however, the home is the centre of human aspirations and the greatest influence for good. It is also the greatest influence for peace. In Britain 40 per cent. of the homes of the country are occupied by their owners and I venture to suggest—and I hope without impertinence—that if this were universally true the threat of war would indeed be remote. The important practical point is to get building costs down to a level which would make it practicable for every man and woman who so desires to satisfy their natural and laudable ambition to have a home of their own. Your work is good work and will endure and it is worthy of the utmost determination and resolution on your part to see it through to fruition. In this you will have our abiding interest and all the practical encouragement that we can render.

(Extracted from an Address delivered to the Technical Section of the European Congress of Building Societies, Brussels).

(Continued from page 15)

complete with roofing sheets, weighs approximately 5 tons. It will be delivered to the site as:—

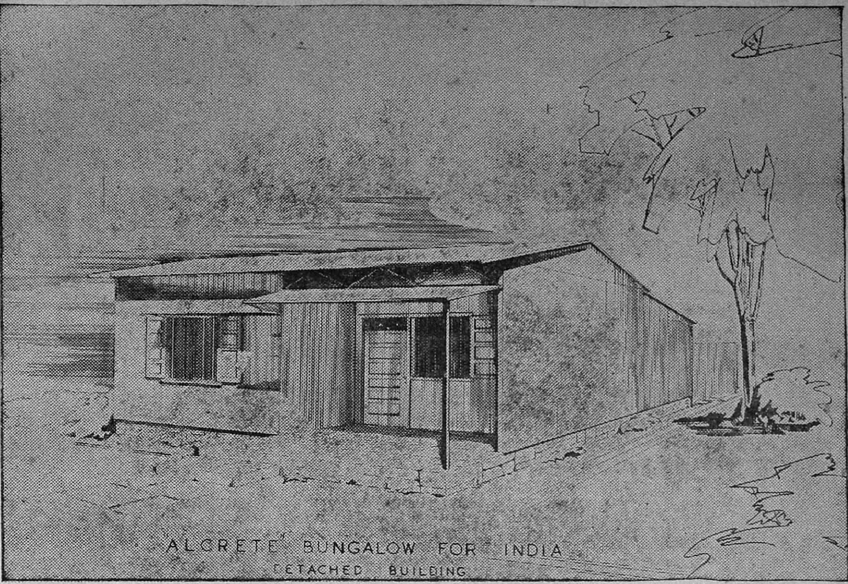
- 8 steel columns, each weighing 105 lbs.
- 51 purlins, each weighing 47 lbs.
- 4 truss braces.
- 3 bags of bolts.
- 8 half trusses, each weighing 187 lbs.
- 54 straight and 18 curved sheets.

The complete steel framing for a 3-bay structure can be erected in approximately 50 man hours, unskilled labour being used with a minimum of supervision.

For certain uses the Arcon tropical roof can remain without addition, but with local walling and flooring materials, it can be adapted for a variety of uses, including living accommodation whether as a separate bungalow or in hostels form, with verandahs front and rear; schools; offices; warehouses or stores.

Estimated prices f.o.b. London and Liverpool are £92 for an end bay unit and £82 for a running bay unit, making £266 for a 30 ft. 3-bay structure.

The roof is known as the Arcon tropical roof and its first use will be in development schemes on the west coast of Africa and in East Africa.



"ALCRETE" BUNGALOWS FOR INDIA

India's "prefabs" will be a combination of aluminium alloy and foamed concrete, the result of three years of research. To the Mysore State Government, however, goes the credit of the first move in the field of prefabricated building.

Just over a year ago, at Mysore's invitation, Structural and Mechanical Development Engineers Ltd., of Slough, sent a technician and a consulting architect to carry out extensive investigations in Mysore prior to the installation of plant for the manufacture of houses, particularly low cost workers' dwellings. An Indian company was then formed for the production of "Alcrete" house within the State that would satisfy local conditions.

The project was passed to the Central Government, and after further investigations a 12-year agreement for making "Alcrete" houses in India was signed with S.M.D. The factory at New Delhi which will cost Rs. 19.18 lakhs will be equipped with machinery supplied from the U. K. for the manufacture of 5,500 houses per year. The total number of factories to be erected has not been fixed, but there will be many scattered all over the country, and S.M.D. are to supply all production details and technical guidance. The system of production is equally suitable for two-storey houses and it is even hoped to combine this system of wall panels with a prestressed reinforced concrete frame for multi-storey buildings in areas of high land cost.

Construction Details.

The "Alcrete" house design allows it to be produced and erected by semi-skilled and unskilled labour, and local materials are to be used extensively. Imports from the U. K. will consist of only aluminium alloy framework and roof sheeting. A standard house with two rooms (one 12' 6" × 10' and the other 10' × 10'), a small kitchen and two verandahs—which is ideally suited to mass production—will cost just under Rs. 2,650.

The basis of the Alcrete method of construction for tropical use is the provision of wall and roof panels. The wall panels, 3' 2" wide and 10' high, are made of a light aluminium alloy frame into which is cast a chemically foamed concrete; on to the external face of this is cast a skin of dense concrete, and the whole is then cured in autoclaves. For India a 4" (overall) thick panel—which is the equal of

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STUDIES IN REINFORCED CONCRETE

A Building Research Technical Paper.

The eighth of the studies in reinforced concrete carried out at the Building Research Station of the Department of Scientific and Industrial Research deals with the strength and deformation of some reinforced concrete slabs subjected to concentrated loading, and is issued by the Department as Building Research Technical Paper No. 25 (published by H.M. Stationery Office, price 1s. 3*d*. net).

The design of reinforced concrete slabs has, in the past, been based on analyses of plate action according to the theory of elasticity or on rule of thumb methods expected to give similar or more conservative results. The theory is based on the assumptions *inter alia* that the plate is homogeneous and wholly elastic, neither of which conditions can be expected to apply to a reinforced concrete slab after the incidence of cracking. The theory of plate action has been solved mathematically for only a limited number of types of loading and restraint, and in some cases the solutions are based on approximate methods which may not be wholly satisfactory. A particular case of difficulty is the analysis of the stresses in a slab in the immediate neighbourhood of a highly concentrated load. For this case the ordinary theory of thin plates breaks down and more elaborate analysis is necessary.

The Report now published gives the results of an investigation carried out at the Building Research Station on behalf of the Ministry of Transport with the object of checking the validity of applying the results of the elastic theory of thin plates to the design of reinforced concrete slabs fixed along two or four edges when loaded over a small area at the centre of the slab.

The experiments carried out included (1) Tests in duplicate on a square slab of 6 ft. side and 4 ins. thick, supported and fixed on all four sides with a concentrated load distributed over an area 9 ins. by 9 ins. at the centre of the slab. (2) Tests in duplicate on a rectangular slab 12 ft. long, 6 ft. wide and 4 ins. thick, supported and fixed on the two longer sides only, and loaded centrally as in (1). (3) A test on a slab strip 6 ft. long, 9 ins. wide and 4 ins. thick loaded at the centre, the width being equal to that of the area over which the load was distributed in (1) and (2), and the ends being fixed. (4) Tests in duplicate on a monolithic system of two orthogonal strips similar to (3), loaded at the intersection of the strips with all ends fixed.

Proportions of Concrete Mix.

For all slabs the proportions of the concrete mix were 1 : 2 : 4 by weight using an ordinary Portland cement and Ham River sand and gravel with a maximum size of aggregate of $\frac{3}{8}$ in. The water cement ratio was kept constant at 0.62 by weight giving a slump of 1—1$\frac{1}{2}$ ins. and the concrete was machine mixed. Mild steel was used througout as reinforcement.

The results show that at low loads before the incidence of cracking, the slabs deformed in accordance with the theory of the elastic homogeneous plate. At higher loads after the incidence of cracking, there was apparently considerable redistribution of moments. The ultimate loads sustained by the slabs were about twice as great as the values calculated according to the elastic theory for the square slabs and 1$\frac{3}{4}$ times as great as the calculated values for the rectangular slabs.

It appears, therefore, that the design of reinforced concrete bridge deck slabs on the basis of the elastic theory is conservative for the case of point loading (for static conditions) since the high theoretical stresses in the neighbourhood of the load are considerably reduced as a result of plastic deformation at high loads. The mechanics of slab action are however, so complex after the incidence of cracking that no alternative method of design is at present suggested.

PERSONAL

Mr. A. R. Venkatachari.

Mr. A. R. Venkatachari, B.E., I.S.E., M.A.S.C.E., Chief Engineer for Irrigation Madras has been elected President of the Central Board of Irrigation.

Mr. P. L. Verma.

Mr. P. L. Verma, Chief Engineer East Punjab, is to leave for the United States to settle terms with architects for the construction of East Punjab's new capital.

Mr. M. Rama Brahman.

Mr. M. Rama Brahman, Executive Engineer of the Government of India's West Coast Major Port Development Committee, has been deputed to survey Mangalore and Malpe.

TRADE LITERATURE

EFFLORESCENCE ON WALLS

Especially during the monsoon period, many buildings will show signs of efflorescence, either on inside or outside surfaces. As a rule, this is attributed to a certain alkalinity in the wall itself, which develops into a kind of crystallisation, which in turn will loosen from the wall Kalsomine, Oil-bound Water Paint or even Oil Paint. Even the careful scraping of these walls before the application of a fresh coat of Kalsomine or Paint will not stop the repetition of efflorescence.

Furthermore, on outside walls, one often witnesses dark spots and a kind of deterioration of the walls which is also brought about by efflorescence.

Efflorescence is not only encountered in old buildings but also in new buildings; and the demand for an alkaline resistant Sealer to prevent efflorescence right from the beginning has become very great indeed.

Spartan Sparseal.

"Spartan" Sparseal is a sealer, specially designed for cement and plaster walls. *It has excellent alkaline resistance* and serves both as a buffer coat and a stop of undue absorption usually experienced on that type of surface. "Spartan" Sparseal is used in large quantities in other countries to the satisfaction of builders, and, in fact, has given the manufacturers of Asbestos Cement sheets wider scope in the successful use of their building material.

Surfaces treated with "Spartan" Sparseal are ready for overpainting with oil paint or enamel. The drying time of "Spartan" Sparseal is approximately 24 hours, depending on the climate and the prevailing humidity.

Where it is intended to kalsomine surfaces treated with "Spartan" Sparseal or to coat them with oil-bound water paint, equal parts in volume, of kalsomine (dry distemper) should be mixed with "Spartan" Sparseal before applying it to the surface. This will allow for the necessary 'key' and roughness of the surface, necessary to hold water paints such as distemper or oil-bound water paint. Where kalsomine is added to "Spartan" Sparseal, it should be well stirred during the application.

"Spartan" Sparseal may be applied by brush or spray.

"Spartan" Sparseal covers between 200 and 500 sq. ft. per gallon, depending on the absorption of the surface itself. It should be applied in a comparatively thin layer, and, as a rule, only one coat is necessary.

"Spartan" Sparseal is available form dealers throughout India.

USE THE

BUILDING CENTRE

P.B. 288. :: G.T., MADRAS.

A Free Service for Developing Better Standards in Buildings in India.

LETTER TO THE EDITOR

Sir,—I happened to read your article on the Educational page of your Gazette regarding the Chartered Surveyors Institution.

I had been in touch with this Institution in 1947 while I was in Ceylon with a view to take up their final examination but I was advised by the Secretary that in view of the fact that Ceylon was about to get an independent status and consequently the laws of that country will not be the same as those in England, they had decided not to hold the examination in Ceylon hereafter.

Naturally I was inclined to think the same will be the case with us in India too.

However, I shall be thankful for any information that you could give me regarding the present position of taking up this examination in India, although such a qualification has no practical utility at least in the South and very few technical people know what it is.

Yours faithfully,

M. VENKATRAMAN, A.M.I.E.

Gemini Studios, Madras.

It might be interesting to mention here an incident which would reflect the effect of membership of the Chartered Surveyors Institution. In 1940 there were only 8 F.S.Is. (Follew of the Surveyors Institution) in India. The Controller of Military Accounts, Poona, raised voluminous objections with regard to certain contracts, in the Southern Command. There was a Major Bone in the Southern Command then who was a Fellow of the Surveyors Institution. These voluminous objections were disposed off in one sentence as follows: The one who has authority to express opinion on such matters as these is a Fellow of the Surveyors Institution; the writer is one such and he has overruled these objections and therefore no one else possessed any qualification to raise any objection at all. The bill was passed!

The M.E.S. alone in India utilised such qualifications. The Institution conducts examination in this country through the G.H.Q. for M.E.S. officers only.—Ed.

TOWN PLANNING IN MADRAS

The Madras Provincial Town Planning Enquiry Committee in a lengthy report urges early introduction of comprehensive legislation to amend the existing Town Planning Act and holds the view that the existing provisions in the Act are unsatisfactory and have hampered the development of Town Planning.

The committee recommends that the betterment claim should be limited to the cost of the execution of the scheme, together with an extra amount not exceeding one-third of such cost, and should be made only after a substantial part of the scheme has been carried out.

The committee states it examined in detail various aspects of the levy of betterment contribution in respect of Town Planning Scheme areas in the light of the provisions now found in the Town Planning Act and also examined the effect of such levy in practice and the various difficulties experienced therewith.

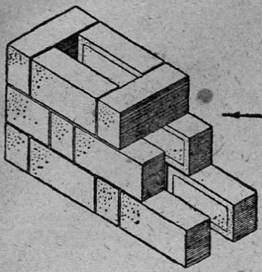
"After a full discussion of all these matters," states the Report, "we have come to the conclusion, that development under Town Planning has been greatly hampered by those provisions. We notice that (*i*) often the actual execution of the scheme takes place long after the betterment levy is made from year to year, (*ii*) the claims made are so nebulous that owners dislike the payments and also find it difficult to meet them, (*iii*) Town Planning Schemes have become very unpopular for the above reasons, (*iv*) the Act makes no provision to separate and distinguish the actual or probable betterment in value attributable to the making of the scheme as apart from increase in values due to inflationary or other causes. We consider therefore that the present provisions are unsatisfactory under existing conditions in this country. We understand that as a result of complaints received by them, the Government have accepted the view that the betterment levy need be confined only to the actual cost of the schemes plus a reasonable percentage of that sum to cover losses and other contingent expenditure incurred or likely to be incurred generally in respect of Town Planning, Town Improvement, Slum Clearance and other schemes in future.

"We have very carefully considered all the above aspects: (*i*) We are of opinion that the claim should be limited to the actual cost of execution of the scheme (including contingencies) together with an extra amount not exceeding one-third of such cost and should be made after a substantial part of the schemes works have been carried out. We, however, recommend that in the case of housing schemes undertaken by registered co-operative housing societies which provide in their schemes the complete making of all roads and streets and provision of all necessary amenities to the people housed within their areas, the extra amount may be as low as possible or may not be charged at all. We also recommend that a similar exemption can be given for areas developed for poor class Housing Schemes. (*ii*) We recommend that the term 'betterment' may with advantage be altered to one of 'development or improvement charge'.

"We recommend (*i*) The scheme should in the first place specify and limit the period within which the execution of the works should be carried out and completed by the executive or responsible authority. (*ii*) In the interests of the scheme and the public, there should be a similar time-limit within which development works to be carried out by owners and others in the scheme should be completely carried out by them. (*iii*) The executive or responsible authority, before making a claim for the development or improvement charge, should obtain from a prescribed authority a certificate that it has carried out the works substantially or wholly as the case may be, on the lines of Section 81 of the Madras City Improvement Trust Act of 1945.

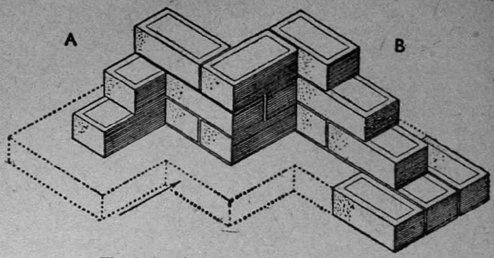
The total cost of schemes and the extra percentage to be levied thereon which may vary in accordance with the scheme, should be definitely fixed in the scheme itself. When a scheme is varied as a result of variation in cost of scheme, the development or improvement charge may also be varied according to the cost of the varied scheme."

The committee has discussed in the Report the detailed principles on which the "development or improvement charge" is to be levied and the lines on which such levy should be made.



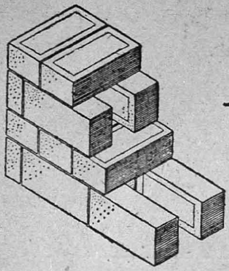
This is the rat-trap, cellular or, to give its former designation, silver lock bond, and consists of bricks set on edge at right angles to each other so as to form cells.

Fig. 1.



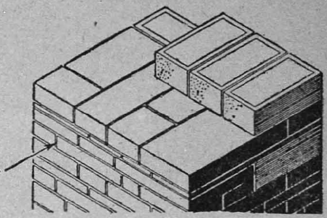
This form of zig-zag construction lends itself to an appreciable saving in material, consisting of single bricks (A) and double bricks (B) at right angles on a fourteen-inch base.

Fig. 3.



This is another type of cellular construction, of which many examples are to be found in the Southern counties. It consists of one course of bricks on edge laid along each face of the wall, to each bonding course laid flat. It was originally introduced, it is believed, by a Mr. Dearne, architect, of Kent, about 1830.

Fig. 2.



Here is a combination of coursed rubble and old English bond at regular intervals that makes a quite strong eighteen-inch wall.

Fig. 4.

SAVING BRICKS

HOWARD FROBISHER, F.A.B.S.S.

With a view to encouraging further economies in the use of bricks, the U.K. Government recently issued a circular advocating the use of *rat-trap bond*. As bricklayers know, this type of cellular construction consists of bricks set on edge, each course being formed by an alternate series of two bricks set edgewise and one set across, forming a thickness of 9 ins. and a series of cells, 9 ins. in the length of the wall by 3 ins. broad (fig. 1).

The second course is laid in the same way, but the bricks alternate or break joint with the first. The advantages of this type of wall, of course, are obviously considerable in the saving of material, and at a height of 10 ft. it is found to be sufficiently strong as to warrant its use as an external wall, with a saving of one brick in every three normally used. A very high wall could have two systems of cells, I suggest, divided vertically.

The rat-trap, cellular or, to give it its old-fashioned designation, Silver-lock bond, has been described much more completely than I shall attempt to at the moment by authors of considerably greater experience. I do not recall having seen among the numerous carefully prepared drawings with which their manuscripts were invariably enhanced, however, any reference to a simple expedient whereby piers may be formed either on both sides of the wall, or on one side only, by bricks laid on edge so as to bond in with the rest of the work.

At one time, another form of hollow wall was put to many uses by gardeners, that is to say, the laying of one course of bricks along each face of the wall on edge, and then bonding them by a course laid flat across (fig. 2).

Another method of construction which could be more than successfully adopted under appropriate circumstances, and one which certainly lends itself to an appreciable saving in material apart from a pleasing form of fluting which it incorporates, is the zig-zag wall. As its name would imply, this consists of an angular wall in which the bricks are all set at ninety degrees to one another, and the length of each angle's external side amounts to 9 ins.

Zig-zag Walls.

The wall is built up on a solid foundation not less than 18 ins. high as a rule and some 14 ins. in width, being continued after that in a zig-zag form. A wall of this type can be erected up to a height of about 16 ft. in one brick thickness quite safely, and, in fact, an additional height can be attained if desired by continuing with further courses of brick on edge (fig. 3).

A wavy or serpentine wall is not entirely without appeal in the light of its greater saving in brick work, and a wall constructed in such a way with a distance of 15 ft. between the centres of its segments, even with a thickness of only 9 ins. from its foundations, can be quite safely built up to a height of 15 ft. also, whilst on the same principle, a 4½-in. wall may be raised to a height of 7 ft. with the distances between the centres of the segments reduced proportionately.

Incidentally, it did not at first occur to me that those parts of the wall which are in line with the centre of its run do, in actual fact, assume the identity of pillars. (Which is about as far as I dare enter into the realms of structural mechanics !)

Now, when faced with a sudden shortage of certain types of material, the obvious and, in certain circumstances, only alternative which immediately comes into mind is the use of a substitute. The subject of alternative methods of construction to the traditional use of brick is one which would need much more space than that which I have at my disposal at the moment. I feel, however, that insufficient attention has been paid to the use of stone.

Much can be said for or against either type of construction, of course, but when all possible schools of thought have been carefully considered, a single fact of paramount importance remains common to each : that the expert dressing of stone, as with so many other older ones, is a craft which does not seem to attract a particularly appreciable number of apprentices. In fact, it has not done so for more than a generation perhaps, and, in consequence, a time-lag of disconcerting magnitude would probably be found between the location of suitable material at any one site and the acquirement of skilled labour.

Little purpose would be served in making more than a passing reference to the chief advantages or disadvantages of either brick or stone, therefore, beyond acknowledging the obvious superiority of the former in terms of practical application, and of the equally appreciable value of the latter in terms of aesthetic appreciation.

Under the present circumstances of comparatively dire shortage, however, there is no reason why a judicious combination of both should not be encouraged wherever practicable. A coursed stone rubble or pebble-built wall having one or two bonding courses of brickwork at short vertical intervals, for example, would ultimately prove, if carefully constructed, of greater strength and durability than a wall of similar dimensions made entirely of either brick or stone (fig. 4).

It has been found on more than one occasion incidentally—and even in this respect a considerable degree of economy in the use of bricks could be effected—that a brick wall can be immeasurably enhanced by the insertion of through courses of good stone at suitable intervals, if wrought to bed and joint truly.

A misguided use of such a combination of materials, as, for instance, in the construction of a stone-rubble or pebble-built wall faced with brickwork or, from an equally deplorable point of view, the construction of a brick wall with a wrought stone facing should be strictly prohibited, both types of construction being as unsound as they are incompatible with good craftsmanship. Craftsmanship, by the way, is a word which I for one would like to see mentioned a little more often. Far too many people who ought to know better regard speed as the essence of efficiency, to the inevitable detriment of quality. (With acknowledgements to I. C. & B.)

INDIA SOCIETY OF ENGINEERS.

"Engineers, given financial assistance and Government support, could transform the land but it required team spirit and team effort," said Dr. Katju, Governor of Bengal speaking at the annual meeting of the India Society of Engineers in Calcutta recently.

"If we fail now," the Governor added, "the fault will be ours and we cannot put the blame on anyone else or on nature either."

Similarly, engineers could not develop anything unless both capital and labour co-operated with them in carrying out the various schemes. It was a case of a pull, a strong pull and a pull together.

Mr. Mazumdar, in his presidential address, said that it was the engineers who would have to cope with the all important duty of successfully carrying out the various development schemes on which the future prosperity of the country depended.

(Continued from page 17)

14" of ordinary brickwork from the point of view of insulation—is provided, but if more stringent conditions were to be met this could be increased. The internal wild face is finished in the factory with plaster, and the panel only requires erection on the site. The internal partitions are similar in construction.

The roof is made of an aluminium alloy girder supporting aluminium alloy corrugated sheeting which is lined with insulating material. The doors and window shutters are also made with aluminium alloy faced internally with locally produced plywood or asbestos.

The materials used—aluminim alloy and foamed concrete—are both permanent to a high degree and will withstand all kinds of climatic conditions and attacks by vermin or insects. The lightweight foamed concrete provides what amounts to a necessity in high temperature countries—a high degree of thermal insulation.

TOWN PLANNING IN BRITAIN SINCE 1945

RICHARD L. REISS

In order to understand the housing and town planning legislation and administrative changes which have taken place in Britain since World War II, it is useful to consider the structure of Local Government in relation to Central Government.

There are three main categories of Local Government bodies :—

(*a*) The smaller ones whose area may either cover a medium sized town or a rural area containing villages and quite small town; these are called urban or rural district councils.

(*b*) The county councils, whose authority covers a much wider area embracing several of the smaller authorities in the first category.

(*c*) The authorities responsible for the larger towns—county borough councils. The county boroughs have the powers of both district councils and county councils. They are commonly called county boroughs.

Before World War II the primary responsibility for administering both housing and town planning was vested in the county borough councils and district councils. The Central Government Department to whom these authorities were in turn responsible and whose sanction was necessary for their actions was the Ministry of Health.

The Town and Country Planning Act 1947, transferred the primary responsibility for planning from the district councils to the county councils, but the primary responsibility for housing remained unchanged. Under recent planning legislation the Central Government Department responsible for planning is now the Ministry of Town and Country Planning (created in 1943) but the Ministry of Health is still responsible for housing.

Labour and Materials.

There was an acute shortage of houses in 1945 owing to the virtual cessation of house building during the six war years and the heavy destruction of houses by enemy action. In order to deal with this situation only comparatively minor changes in the law were necessary to provide for an increased financial assistance from the State to local authorities who were doing the building. Such assistance was necessary owing to the substantial rise in the cost of building, and also to provide for the construction of temporary, mainly prefabricated, houses. Far more important was the administrative action taken by the Government itself.

As there was an actue shortage of building labour and materials, the Government gave housing a first call on available labour and materials. A certain amount of factory building was permitted, particularly for those industries producing for export, but no non-essential buildings were allowed to be erected and no building work of any kind, costing more than a certain figure and undertaken privately, without a licence.

The responsibility for building the majority of houses required was placed on the local authorities. The number each authority was permitted to build was fixed by the Ministry of Health. Generally speaking, for every four houses built by the local authority one was allowed to be built privately under licence. This contrasts with the period between the wars, when three-quarters of the houses were built by private enterprise and only one-quarter by local authorities. As local authorities built houses to let and not to sell, the Government were able to ensure that in the period of acute shortage houses were made available on the basis of need and not on depth of pocket.

Prefabricated Houses.

A considerable number of prefabricated temporary houses were built in order to meet the extreme urgency in the first two or three years, and for this reason, also, a certain number of wartime camps were adapted temporarily as dwelling places. Permanent prefabricated houses are still being built where they can compete with traditional houses as regards cost and amenities.

The local authorities were given power to requisition empty houses and, if they were large, to convert them for the use of two or more families. Finally, rapid progress was made in repairing houses which had been damaged by enemy action so as to make them fit for occupation.

772,000 families were provided with accommodation between 1945 and July 1948.

The permanent houses which are being built mostly contain two living rooms and three bedrooms, as local authorities in letting houses normally give priority to families with children. On the average, the new permanent houses have cost about Rs. 16,637 to build, about three times the cost of similar, but smaller and less well-equipped houses built before the war.

Town Planning.

During the period between the wars, planning legislation gave fairly wide powers to local authorities to control the development of their areas, but the powers were restrictive rather than constructive. They enabled the authorities to say to owners "if and when you develop you must use your land for this or that purpose", but they did not give adequate powers to acquire land for constructive development. Moreover the powers were in the hands of the smaller local authorities and not the county councils, as a result of which town planning was regarded from too local a standpoint. Considerations of regional and national planning were not taken adequately into account and, in particular, there was no attempt to secure a balanced distribution of industry and population throughout the country.

As a result, the increasing concentration of industry and population on the outskirts of the large towns continued, and the population of the small towns and villages, at a distance from the large towns, declined continuously. The destruction caused by the war in the central areas of the large towns made the public realise that town planning in future would have to be constructive. Fuller recognition was also given to the necessity for planning over much wider areas and of securing a transfer of a portion of the industry and population from the overcrowded large towns so that they could be redeveloped more satisfactorily.

Far-reaching Legislation.

During World War II, legislation was passed setting up a separate Ministry of Town and Country Planning and applying town planning control to all land in town and country. This was followed in 1946 and 1947 by two Acts which completely transformed the law on the subject.

The New Towns Act, 1947, dealt specifically with the question of the decentralization of the excess population and industry from overgrown towns. It enabled the Minister to set up State Development Corporations for the purpose of acquiring large areas of land (which might include small existing towns) to be developed as new towns of from 30,000 to 60,000 population, each to be surrounded by a permanent belt of agricultural land.

Experiments had already been made on similar lines before the war by private companies. But the Government considered that the number of new towns should be greatly increased and this could only be done effectively by public corporations operating with State finance. About eight corporations have already been formed to develop new towns and several of these have started operations.

The Town and Country Planning Act of 1947 made fundamental changes in law and administration which had proved to be necessary as a result of the comparative failure of pre-war legislation. The Act transferred the primary responsibility for the preparation of plans to the county councils (except in the case of the large towns) so that planning could cover a wider area. But it also gave greatly increased powers to the smaller authorities actually to acquire land and to develop it constructively in accordance with the general plan prepared by the county council.

Compensation.

In addition to these changes, the Act also dealt with one of the great practical difficulties that had arisen before the war—the large amount of compensation which had to be paid to owners of land if the planning authority considered it in the public interest that this land should not be developed but retained as an open space, or a green belt. The Act transferred to the State not the actual ownership of the land but the values which attached to that land over and above its value for its present use; thereafter any owner wishing to develop his land for a new use has to pay a development charge to the State representing the difference between its new use and its present use. Thus, if agricultural land is used for building houses a development charge arises, or if a house is converted into a shop. The Act recognised, however, that these provisions would create hardships in the case of the owners of land which had already acquired a potential high value in relation to its present use, and a sum of Rs. 399.31 crores was provided to pay compensation in such cases. It was calculated, however, that the amount received for the development charges would, over a period of years, be larger than this sum.

It is anticipated that a considerable amount of the building in the new towns will actually be carried out by the State Development Corporations, but it is envisaged that they will lease some of the land to private builders for building houses and to industrialists for building factories. Except in special cases, however, the Development Corporation, once it has acquired the land, will retain it, even when it leases it to private enterprise for building; the length of the lease will be 99 years, at the expiration of which time both the land and the building on it will revert to the Corporation.

The same considerations apply where a local authority acquires land for the purposes of replanning a central area; the local authority may either build itself, or lease it to private enterprise to build.

Insufficient time has elapsed since the passing of the Acts of 1946 and 1947 for any substantial results to have been achieved. But in addition to the start already made in the case of certain new towns, rebuilding has also started in accordance with new plans in the central areas of some large towns which were badly damaged during the war. Of these Plymouth is an outstanding example.

SPECIFICATION

Structural Steel for Bridges

The British Standards Institution has recently published the revision of B.S. 15.

In response to representations which have been made by structural engineers, it has been decided to include a requirement for a minimum yield stress for steel manufactured to this standard. In view of the importance of this addition, it has been considered desirable to give effect to it by the issue of a revision of the standard rather than by an addendum.

The opportunity has also been taken to co-ordinate the tolerances for dimensions and weights with the corresponding tolerances adopted in later standards for structural steel. The forms of test piece have also been modified to conform to those included in B.S. 18.

The standard specifies process of manufacture, test methods and requirements, permissible margins on weights and dimensions, marking, provision of test certificates and inspection procedures. Tests on manufactured rivets are also described.

Copies of this standard can be obtained from the British Standards Institution, Sales Department, 24, Victoria Street, London, S.W. 1, at a cost of 2sh. post free.

Cast iron Rainwater Goods.

This standard is an amalgamation of B.S. 460 : 1944, 'Cast-iron rainwater pipes' with B.S. 1205, Part One, 'Cast-iron half-round gutters' and B.S. 1205, Part Two, 'Cast-iron ogee gutters'. It gives precisely the same technical requirements as were included in the separate editions, the alterations having been limited to those required for presenting the information concisely.

There are three grades of rainwater pipes, light, medium and heavy, in sizes from 2 ins. to 6 ins., together with fittings and accessories; half-round gutters in sizes from 3 ins. to 6 ins. and ogee gutters in 4 in., 4½ in. and 5 in. sizes. The general clauses deal with quality of materials, freedom from defects, facilities for inspection, marking and rejection. The specific clauses deal with dimensions, weight, thickness, sockets, ears, hammer test and finishes relating to pipes and with dimensions, thickness and finish relating to gutters. There are 33 tables of dimensions and over 60 illustrations.

Copies of this standard can be obtained from the British Standards Institution, Sales Department, 24, Victoria Street, S.W. 1, at a price of 5sh. post free.

RESULTS OF TENDERS

Closed November 23.—Electrical Engineering Block of the Mahakoshal Mahavidyalaya, Jubbulpore :—*Tender of Banarsi das at 3¾ per cent above the Schedule of Rates accepted.*

Closed October 28.—Septic Tanks and Sewage Disposals at S.M.E., Kirkee :—*Tender of B. R. Herman and Mohatta (India) Ltd., for Rs. 1,29,192 accepted.*

Closed October 26.—Asphalting of Roads, Mangalore Municipality :—*No tenders were received.*

Closed October 25.—Construction of Bridges and Culverts on Bhore Ghat, G.I.P. Ry., Lonavla :—*Tender of A. N. Irani & Co. of Bombay accepted.*

Closed September 23.—Accommodation for H.M.I.S. Circars at Vizagapatam :—*Original Tender Notice was cancelled. Revised Tenders called for. Tender of Gannon Dunkerley (Madras) Ltd., for Rs. 2,98,066 accepted.*

Closed September 20.—M.E.S. Power House and Staff Quarters at Deolali :—*Tenders of A. S. Chopra for Rs. 2,92,000 accepted.*

Closed August 24.—Construction of 138 L-Type Quarters at Fertiliser Factory, Sindri :—*Tenders of Prem Chand Satram Das for Rs. 4,86,496 accepted,*

OVERHAUL OF P.W.D. U.P. SCHEME

The U. P. Government proposes, it is learnt, a complete reorganization of its Public Works Department.

The Provincial Government is contemplating amalgamation of the district board engineering service with the buildings and roads branch of the P. W. D. and of the municipal board and improvement trust engineering service with the Public Health Engineering Department.

Another important measure proposed is the separation of the hydro-electric organization from the irrigation branch. In this connection a sub-committee consisting of experts has been set up to examine the matter. Mr. K. I. Browne, a former hydro-electric engineer to the U. P. Government, who is now on leave in the U. K., has been asked to assist the sub-committee in its task.

Another development in the P. W. D. administration is expected to be the establishment of an independent research institute at Roorkee. The institute will start functioning after the coming into being of the Roorkee Engineering University.

Meanwhile, the Government has started a search in foreign countries for technical experts. Most of these experts are required for assisting in the implementation of the provincial Government's gigantic development schemes. Among the posts that are proposed to be filled in by foreign experts are those of the Vice-Chancellor and professors of electrical and mechanical engineering at the Engineering University at Roorkee. A reputed German engineer, who is now in Britain is believed to have been recently approached to accept the post of Vice-Chancellor but he is reported to have expressed his unwillingness to take up an academic job. Another post which has been advertised in the Continent, Australia and the U. S. A. is that of Architect to the provincial Government.

CONTRACTS OPEN

The dates at head of paragraphs are those for the submission of Tenders. Application for forms and particulars should be made to the address given at the end.

KARAIKUDI : College.

January 17.—Construction of two hostel blocks and construction of first floor for three Science blocks for Dr. Alagappa Chettiar College, Karaikudi. Estimated cost Rs. 5,20,000. The Engineer, Dr. A.C. College Endowment Trust, Sekkalai P.O., Karaikudi.

THANA : Factory.

January 17.—Construction of Buildings and Elevated R.C.C. Tank and Roads for National Machinery Manufacturers Ltd., at Village Kalwe, Thana. Sykes Patkar and Divecha, Architects, 2/26, Dalal Street, Fort, Bombay.

CHECHIAN : Bridge.

January 18.—Construction of rail-road bridge of 14 spans of 143 feet each at Chechian between Gurdaspur and Mukerian railway stations. Estimated cost Rs. 18 lakhs. The Superintending Engineer, Jullunder Circle P.W.D., B/R Branch, Jullunder.

PALAMCOTTAH : Concreting Roads.

January 18.—Cement concreting miles 1/5 to 2/5 and 23/1 to 30 of Palamcottah-Tuticorin Road. Estimated cost Rs. 4,11,000. The Divisional Engineer, Highways, Palamcottah.

RUPAR : College.

January 18.—Additions and alterations to Government College at Rupar. Estimated cost Rs. 8 lakhs. The Executive Engineer, Provincial Division, Rupar.

MADRAS : Airfield.

January 19.—Construction of Concrete Aprons, Roads and Drains at St. Thomas' Mount Airfield. Estimated cost Rs. 3,51,369. The Executive Engineer, Madras Aviation Division, Chetpet, Madras.

ST. THOMAS' MOUNT : Additions.

January 19.—Construction of I and II Floor and additions and alterations to ground floor of Terminal buildings at St. Thomas' Mount Airport, Madras. Estimated cost Rs. 3,49,573. The Executive Engineer, Madras Aviation Division, Chetpet, Madras.

VIJAYAWADA : Water fittings.

January 19.—Supply and delivery of 16" and 12" C.I. pipes and specials for replacing the existing water supply mains of the Vijayawada Municipality. The Municipal Engineer, Vijayawada.

CHILAKALAPUDY : Bridges.

January 20.—Constructing 3 bridges across Pulleru Canal, one at Mile 18/7, another at 17/7 and the third at 29/4. Estimated cost Rs. 61,000, Rs. 72,000 and Rs. 79,000 respectively. The Divisional Engineer, Highways, Krishna, Chilakalapudy.

SIMLA : Nangal Project.

January 20.—Supply and delivery of steel towers for 220 K.V. and 132 K.V. Transmission lines, Specification No. 628 for Nangal Power Project. The Chief Engineer, East Punjab P.W.D., Electricity Branch, G.H.Q., South Block, Simla.

ANNAMALAINAGAR : Plumbing.

January 21.—Plumbing and sanitary installations to Hostel Block. Estimated cost Rs. 47,500. The Registrar, Annamalai University, Annamalainagar.

BOMBAY : Hostel Block.

January 24.—Construction of a Hostel for the students of the Elphinstone College on Plot No. 44 B.B.R. Scheme, Bombay. Estimated cost Rs. 6,35,000. The Executive Engineer, Presidency Division P.W.D., Secretariat Building, Fort, Bombay.

RAMNAD : Roads.

January 24.—Cement concreting miles 52/0 to 57/5 of Karaikudi-Devakottah Road. Estimated cost Rs. 279,400. The Divisional Engineer, Highways, Ramnad Division, Sivaganga.

CUDDAPAH : Concrete Roads.

January 25.—Cement concreting Chittoor-Kurnool Road, miles 101 to 107. Estimated cost Rs. 3,30,000. The Divisional Engineer, Highways, Cuddapah.

SHOLAPUR : Bus Station.

January 26.—Construction of a Bus Station at Sholapur for the State Transport, Government of Bombay. Estimated cost Rs. 1,50,000. The Executive Engineer, Building Projects Division, No. 1, Central Buildings, Poona.

KANARA : Dispensaries.

January 28.—Constructing a dispensary in heavy forest tract in Kanara district at Kadra ; another at Kumbharwada ; third at Ramangulli. Estimated cost Rs. 30,395 each. The Executive Engineer, Kanara Division, Karwar.

SHOLAPUR : Workshop.

January 29.—Construction of a B Type workshop at Sholapur for the State Transport, Government of Bombay. Estimated cost Rs. 70,000. The Executive Engineer, Building Projects Division, No. 1, Central Buildings, Poona.

AGRA : Drainage.

January 31.—Agra Drainage, Katghar and Dholikhar Sewers. Estimated cost Rs. 1,02,000. The Executive Engineer, IV Division, P.H.E.D., Agra Cantt.

AGRA : Water Supply.

January 31.—Laying of Rising and Distribution Mains for Agra Water Supply, Estimated Cost Rs. 350,000. The Executive Engineer, IV Division, P. H. E. D., Agra Cantt.

SURAT : Cooling Tower.

February 21.—Erection of Cooling Tower for the Steam Power House near Surat for the Electric Grid Department, Bombay. The Electrical Commissioner, Bombay.

BOMBAY : Water Supply.

March 18.—Construction of a cement concrete dam across the river Vaitarna. The dam will be about 1700 ft. long and about 250 feet high. The Special Engineer, Bombay Municipality, Bombay.

HOW WAS FEBRUARY 1948

For Building

Rainfall in inches.

Ahmedabad	0.0
Ahmednagar	0.3
Alleppey	2.1
Ambala	2.7
Aurangabad	0.4
Bangalore	0.0
Baroda	0.0
Belgaum	0.0
Bellary	0.0
Benares	0.8
Bhopal	0.0
Bombay	0.0
Calcutta	1.5
Cherapunji	1.4
Cocanada	1.5
Cochin	1.2
Colombo	0.3
Cuttack	3.6
Darjeeling	0.4
Dehra Dun	2.1
Delhi	1.3
Gaya	0.5
Gulbarga	1.3
Hanamkonda	1.5
Honavar	0.2
Hyderabad (Dn.)	0.0
Hyderabad (Sind)	0.4
Jamshedpur	0.7
Kodaikanal	1.1
Kurnool	0.0
Ludhiana	3.3
Madras	0.1
Madura	0.0
Mahabaleshwar	0.1
Mangalore	0.0
Mercara	0.0
Multan	0.6
Masulipatam	0.1
Mussorie	3.5
Mysore	0.0
Nellore	0.6
Negapatam	0.7
Ootacamund	0.1
Palghat	0.9
Peshavar	1.2
Poona	0 0
Raichur	0.0
Rajkot	0.0
Ranchi	0.7
Shillong	1.7
Sholapur	0.0
Simla	3.0
Surat	0.0
Trichinopoly	0.3
Trivandrum	0.0
Vizagapatam	0.8

FOR DISCUSSION

Non-technicians are doubting the "technical soundness" of the Ramapadasagar Project and technicians are doubting the "linguistic-soundness" of the project.

What India needs most is more and prompt statistics about facts and modern methods of putting them to use.

Professor Sir Patrick Abercrombie, the author of the historic plan for the development of Greater London, is probably the greatest town planning expert living.

Factual knowledge has not been reabsorbed and humanized by an equivalent feeling.

In augmenting municipal revenues the local bodies should resort to increasing assessment only after all other measures had been tried.

Working for a great cause, building India brick by brick and stone by stone, is a noble work. When everyone applies himself to this task and work in this way, then that work itself is reward enough, is joy enough, is hapiness enough.

Self-help, with the qualities of self-sacrifice, persistence, courage, duty, accuracy, humility, and hope may all be abundantly exemplified from the careers of men of science; yet such instances are rarely mentioned.

The attention recently given to the position of science in the State, its relation to industry, and its relative neglect in education, is a national realization.

Reward, as the world understands it, for work done or results obtained, is the last thought of a student of science.

To smite all humbugs, however big; to give a nobler tone to science; to set an example to abstinence from petty personal controversies, and of toleration for everything but lying; to be indifferent as to whether the work is recognised or not, so long as it is done:—should be the foremost thoughts of every Indian to make India Great.

PROPOSED NEW WORKS

Ahmedabad: Construction of Civil Aviation Staff Quarters Class II B at Civil Aerodrome at Ahmedabad. Value Rs. 1,27,395.

Ambala Cantt.: Construction of houses under development scheme at Ambala in two separate contracts for approximately Rs. 5 lakhs each.

Badaun: Reconstruction of Sot Nadi Bridge in mile 31 of Bareilly-Muttra Road in Badaun District. Value Rs. 3 lakhs.

Balehonnur: Construction of a laboratory building and annexe for the Coffee Research Station, Balehonnur, Mysore State. Value Rs. 84,000.

Bankura: Construction of Kanjore Reservoir Dam in connection with Suvankar Danra Project, Bankura.

Bellary: The Bellary Co-operative Building Society has acquired 18.5 acres of land with a view to constructing 100 houses. The **Building Information Centre, Madras** has suggested a panel of two Architects for their consultations.

Hyderabad: Construction of Edulavagoo Project, Madira Taluq, Warangal District. Value Rs. 9,75,000.

Construction of Boudsura project, Bhir District. Value Rs. 45,48,000.

Jamshedpur: Construction of laboratory block, and ancellories for the National Metallurgical Laboratory at Jamshedpur. Value Rs. 27 lakhs. Ballardie, Thompson and Matthews are the architects.

Jubbulpore: Construction of a three-storeyed building "Shaheed Smarak" Martyr's Memorial at Jubbulpore. Value Rs. 4,40,800.

Madura: Cement concreting miles 15 to 22 of Dindigul—Palni road. Value Rs. 2,15,000.

(*Continued on page 28*)

EDUCATIONAL

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The Institution of Civil Engineers was established in 1818 with 'The art of directing the Great Sources of Power in Nature for the use and conveniences of Man' as their motto. It is generally looked upon as the premier Engineering Institution and the qualification A.M.I.C.E. is recognised throughout the world.

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(*Continued from page 27*)

Nagpur: Shelcrete surfacing approximately 3,34,930 sq. ft. for main roads of Nagpur City.

New Delhi: Construction of 157 Nos. Class II B Quarters for Civil Aviation Staff at Palam Airfield. Value Rs. 7,54,400.

Construction of S.D. College Boarding House, Ambala Cantt. and residential quarters at Pahar-ganj, New Delhi. Value Rs. 4 lakhs and 1 lakh respectively.

New Delhi: Construction of roads and culverts for 1,C00 Clerks' Quarters at Factory Road, New Delhi. Value Rs. 1,10,607.

Poona: Construction of a new Hostel for the Agricultural College, Poona. Value Rs. 1,26,700.

Sholapur: Construction of blocks of residential buildings on Final Plot No. 1. T.P.S. No. 1 and F.P. No. 91 T.P.S. No. III at Sholapur. Value Rs. 4,81,321.

Sindri: Water supply and sanitary arrangements for 138 quarters at Fertiliser Factory, Sindri. Value Rs. 93,240.

Tiruppur: Construction of K. S. High School building. Value Rs. 64,000.

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CURRENT PRICES FOR MEASURED WORK

**Current Prices for Measured Work are a new feature. We believe that even those who may criticise the subject-matter will agree that the idea behind it is sound. For all aspiring builders call for estimates from contractors chiefly to get an idea of the cost of a proposed building and construct the building themselves. Prices shown below are for work executed complete and are for an average job in the Madras City; all prices include for overhead charges and profit for the general contractor. This feature to cover other areas will be published in our subsequent issues.*

EXCAVATOR

	Rs.	A.	P.
Excavating not exceeding 5' 0" deep to form trenches for foundation per 100 c. ft.	2	0	0
Hardcore, good earth, filled in under floors, per 100 c. ft.	4	0	0
Sea sand deposited in trenches, 6" thick per 100 sq. ft.	12	8	0

CONCRETOR

	Rs.	A.	P.
Brick-jelly concrete in lime 1 : 2 : 5 for foundation per 100 c. ft.	75	0	0
Cement concrete for lintels including form-work per c. ft.	4	0	0
Reinforcement under 5/8" diameter, M.S. rods cut to lengths, including bends and hooked ends and embedding in concrete lintels per cwt.	26	8	0
Cement concrete grills, 1½" thick per sq. ft.	2	0	0

BRICKLAYER

	Rs.	A.	P.
Country brick in lime mortar 1 : 2 in foundation per 100 c. ft.	110	0	0
Country brick in lime mortar 1 : 2 in superstructure per 100 c. ft.	115	0	0
Half-brick wall in cement mortar 1 : 5 per 100 sq. ft.	55	0	0
Flooring of brick jelly concrete in lime 4" thick and cement mortar rendering 1/2" thick 1 : 3 finished to a smooth trowelled surface per 100 sq. ft.	40	0	0
Do. with surface red, black or brown colour per 100 sq. ft.	48	0	0
Madras terrace roof complete including puttying to soffites per 100 sq. ft.	160	0	0
Skirting 1 : 3 cement and sand 3/4" thick rounded to 3" radius and 4" high including mitres and stop ends per R. ft.	0	5	0

CARPENTER

	Rs.	A.	P.
Door and window frames 4" x 3" sections Malabar teak, moulded and rebated, framed and fixed in position per R. ft.	2	4	0
Panelled shutters for doors and windows 1-1/8" thick Malabar teak including hanging, per sq. ft.	5	12	0
Do. 3/4" thick	4	0	0
Glazed sashes for windows 1-1/8" thick Malabar teak with 18 oz. glass including hanging per sq. ft.	4	8	0
Wrought and fixed boarding Malabar teak, 1¼" thick per sq. ft.	3	12	0
Do. 1" thick per sq. ft.	2	8	0
Malabar teak, in roof joists per c. ft.	22	0	0
Malabar teak, wrought, framed and fixed in fixtures per c. ft.	28	0	0

IRONMONGER

	Rs.	A.	P.
3" Butt Hinges iron including fixing each	0	6	0
4" do. each	0	7	0
4" Barrel bolts, brass including fixing each	2	0	0
6" do. fixing each	2	8	0
6" cabin hooks iron including fixing each	0	3	0
1½" diameter rings, brass including fixing each	0	12	0
Sash pivots, brass 2½" including fixing per set	1	8	0
Rim locks and furniture brass including fixing each	40	0	0
All-drop bolts 12" brass including fixing each	15	0	0

PLASTERER

	Rs.	A.	P.
1/2" Rendering to walls in lime, cement and sand 1 : 1 : 5 to internal or external per 100 sq. ft.	15	0	0
1/2" Rendering to walls in cement and sand 1 : 3 per 100 sq. ft.	13	0	0
Cornice moulding 6"—9" girth per R. ft.	0	12	0
Whitewashing 2 coats per 100 sq. ft.	1	8	0
Common colour washing 2 coats per 100 sq. ft.	1	12	0
Water-bound distempering 2 coats per 100 sq. ft.	9	0	0

PAINTER

	Rs.	A.	P.
Preparing and painting 2 coats of oil colour on iron work after fixing per 100 sq. ft.	15	0	0
Knot, prime, stop and paint 3 coats oil colour on wood work per 100 sq. ft.	13	0	0
Wood oiling 2 coats tinted brown per 100 sq. ft.	8	0	0
Tarring to wood work one coat per 100 sq. ft.	4	0	0

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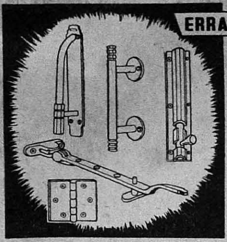

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